

FIG. 1

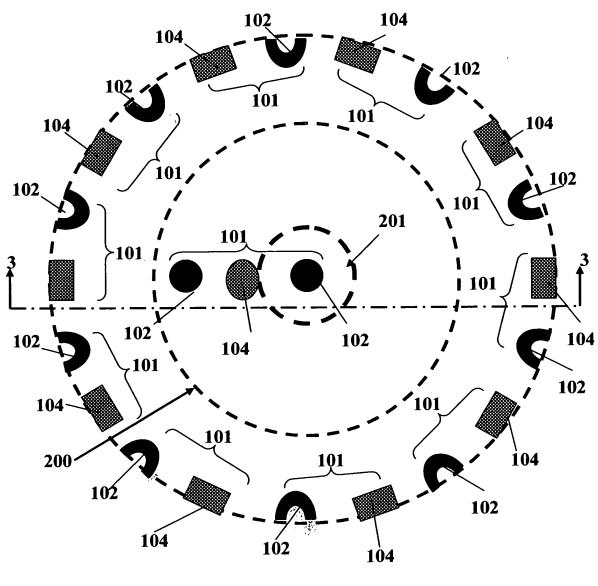


FIG. 2

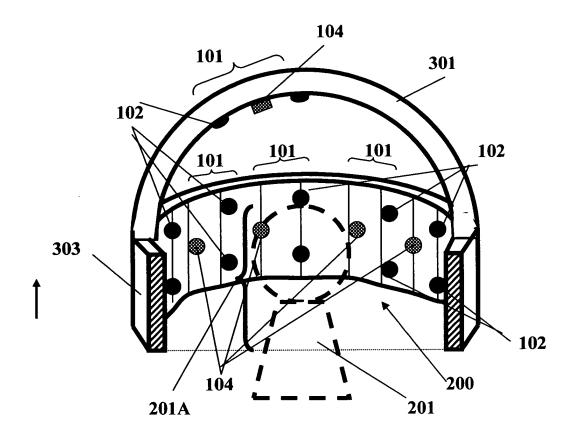


FIG. 3

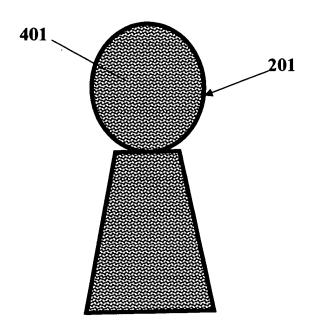


FIG. 4

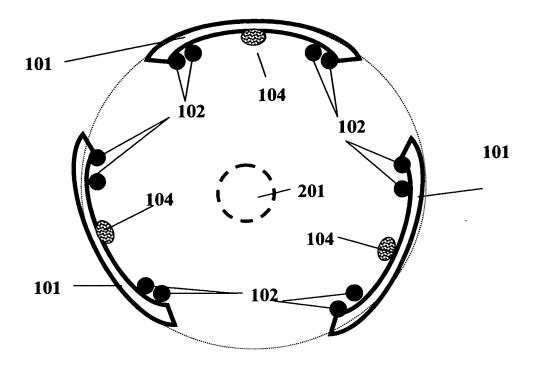


FIG. 5

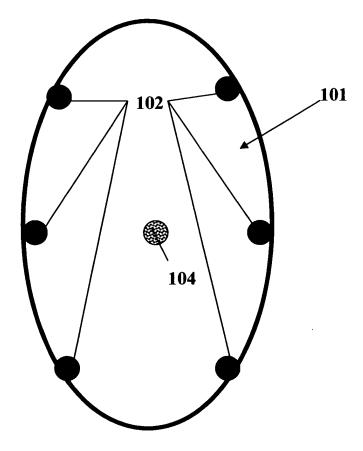
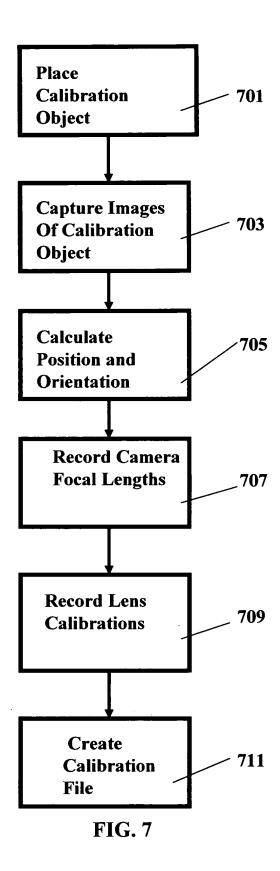


FIG. 6



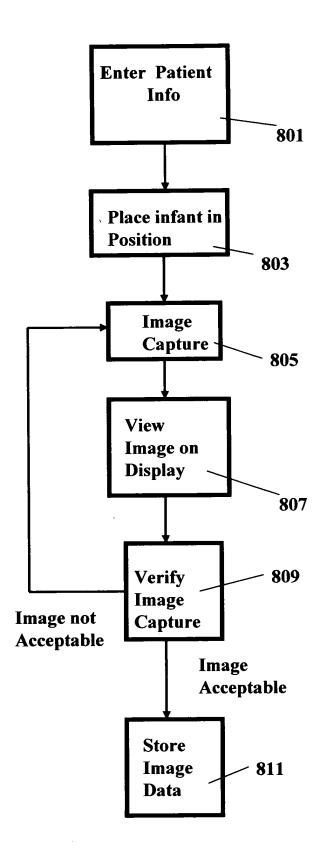


FIG. 8

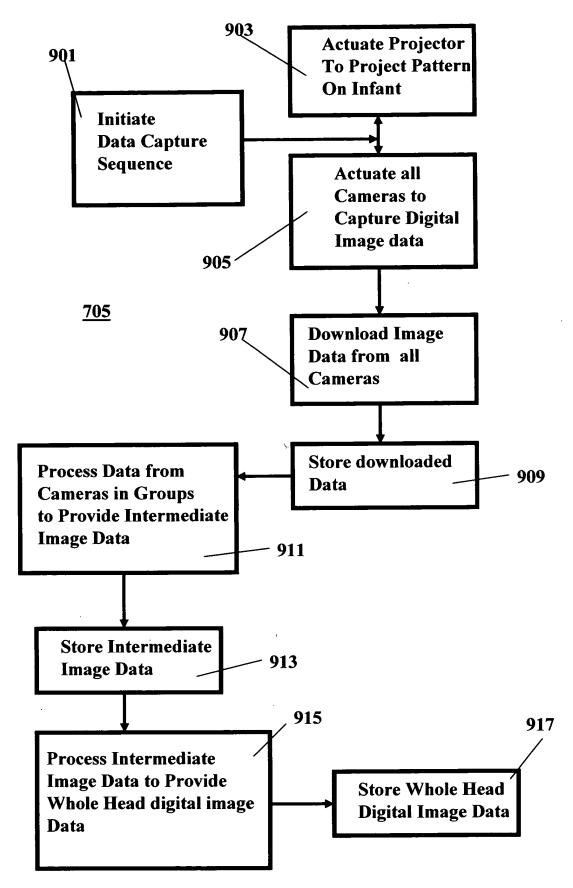


FIG. 9

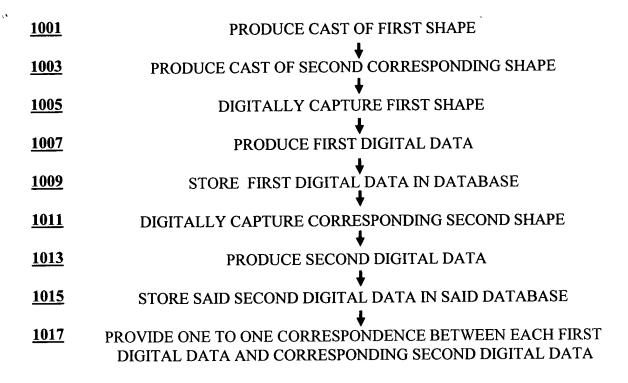
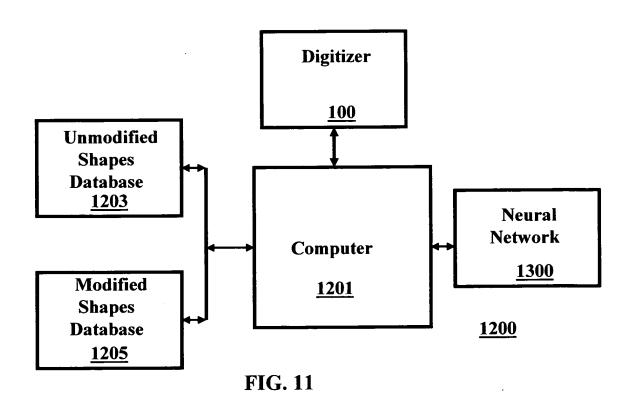


FIG. 10



BEST AVAILABLE COPY

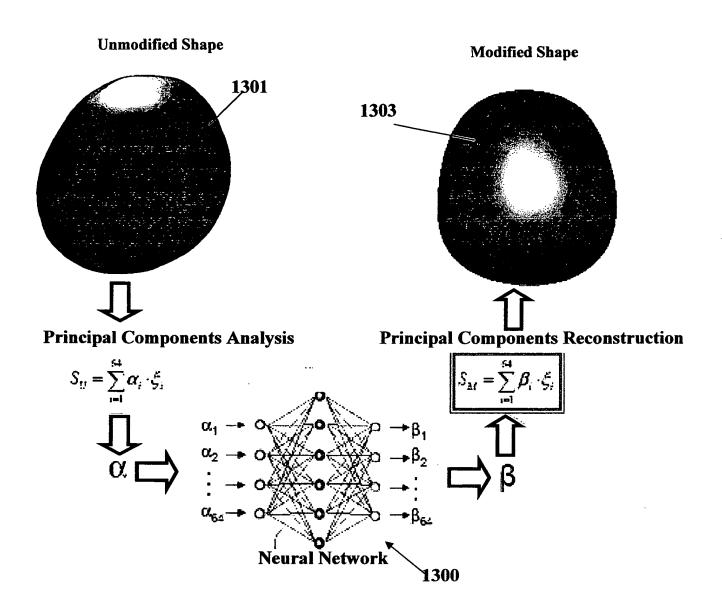


FIG. 12

<u>1401</u>	PROVIDING A DATABASE OF FIRST OR UNMODIFIED SHAPES
<u>1403</u>	PROVIDING A DATABASE OF CORRESPONDING SECOND OR MODIFIED SHAPES
	↓
<u>1405</u>	ALIGNING EACH OF SAID FIRST OR UNMODIFIED SHAPES TO THE SAME ORIENTATION
	, · · · · · · · · · · · · · · · · · · ·
<u>1407</u>	ALIGNING EACH SECOND OR MODIFIED SHAPES AND THE CORRESPONDING FIRST OR UNMODIFIED SHAPE
	↓
<u>1409</u>	NORMALIZE DATA
	1
<u>1411</u>	UTILIZING PRINCIPAL COMPONENT ANALYSIS WITH ALIGNED FIRST OR UNMODIFIED SHAPES AND CORRESPONDING ALIGNED SECOND OR MODIFIED SHAPES TO DETERMINE PCA COEFFICIENTS
	↓
<u>1413</u>	PROVIDING OR MORE NEURAL NETWORK
	↓
<u>1415</u>	TRAINING NEURAL NETWORK WITH A LEAST SQUARES SUPPORT VECTOR MACHINE
	↓
<u>1417</u>	UTILIZING TRAINED NEURAL NETWORK TO OPERATE ON A NEW UNMODIFIED SHAPE TO
	PRODUCE A CORRESPONDING MODIFIED SHAPE

	Hyperparameter	
PCA Coefficient	Gamma	Sigma
1	20	33
2	32	77
3	17	107
4	68	. 86
5	47	47
6	32	122
7	62	62
8	92	92
9	56	134
10	77	77
11	62	50
12	92	92
13	62	92
14	77	152
15	77	77
16	107	62
17	77	62
18	137	32
19	77	62
20	68	47
21	92	62
22	107	77
23	173	83
24	122	62
25	122	122
26	62	107
27	62	92
28	122	68
29	182	116
30	182	128
31	92	38
32	182	92
33	182	92
34	152	152
35	182	92
36	182	122
37	128	122
38	152	152
39 – 64	160	125

FIG. 14

BEST AVAILABLE COPY

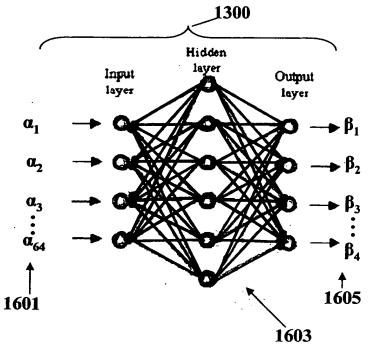


FIG. 15

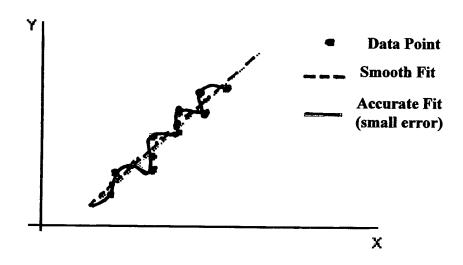


FIG. 16

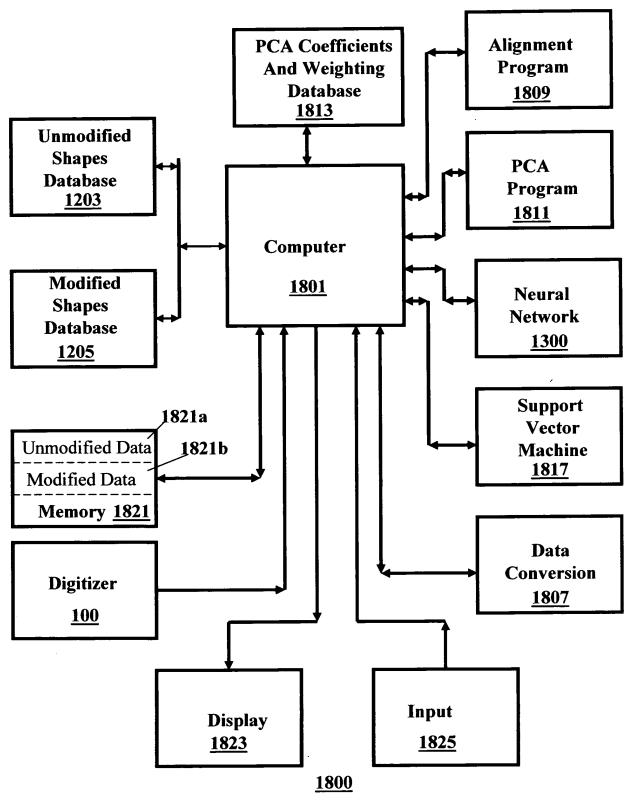


FIG. 17

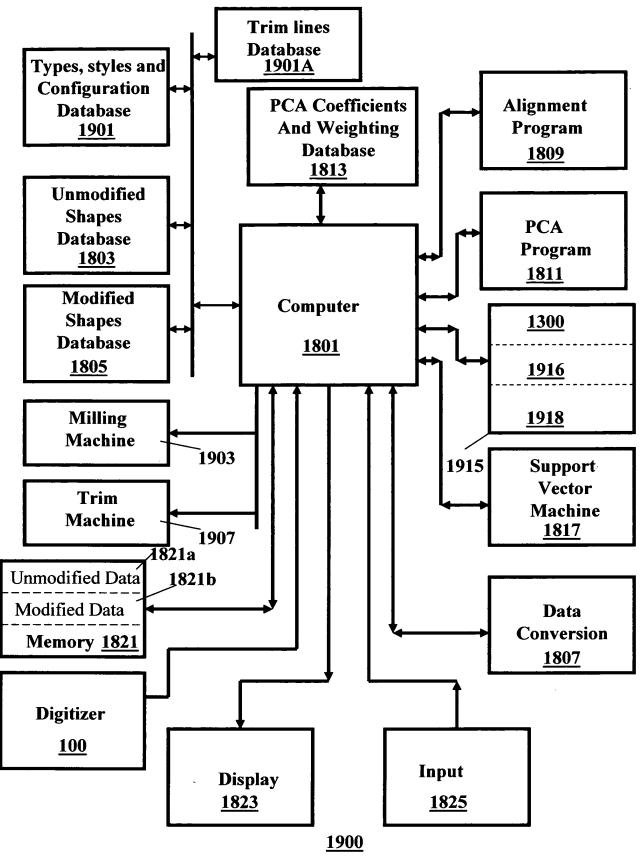
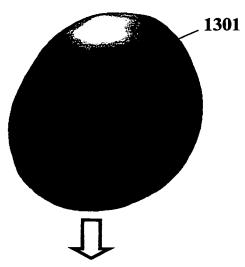


FIG. 18

Unm dified Shape



Principal Components Analysis

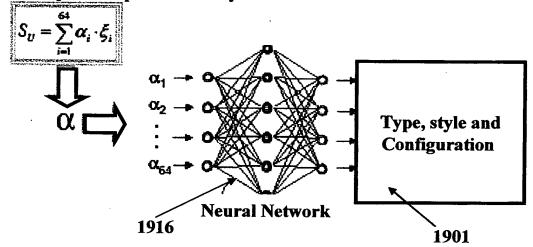
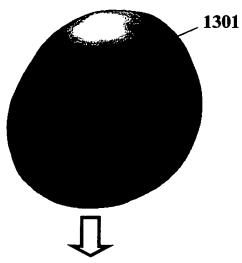


FIG. 19

Unmodified Shape



Principal Components Analysis

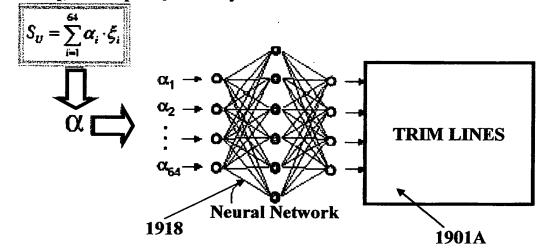


FIG. 20

<u>1001</u>	PRODUCE CAST OF FIRST SHAPE
<u>1003</u>	PRODUCE CAST OF SECOND CORRESPONDING SHAPE
<u>1005</u>	DIGITALLY CAPTURE FIRST SHAPE
<u>1007</u>	PRODUCE FIRST DIGITAL DATA
<u>1009</u>	STORE FIRST DIGITAL DATA IN DATABASE
<u>1011</u>	DIGITALLY CAPTURE CORRESPONDING SECOND SHAPE
<u>1013</u>	PRODUCE SECOND DIGITAL DATA
<u>1015</u>	STORE SAID SECOND DIGITAL DATA IN SAID DATABASE
<u>1017</u>	PROVIDE ONE TO ONE CORRESPONDENCE BETWEEN EACH FIRST DIGITAL DATA AND CORRESPONDING SECOND DIGITAL DATA
<u>1019</u>	♦ STORE TYPE, STYLE AND FEATURE DATA
<u>1021</u>	STORE TRIMLINE DATA

FIG. 21

<u>1401</u>	PROVIDING A DATABASE OF FIRST OR UNMODIFIED SHAPES
<u>1403</u>	PROVIDING A DATABASE OF CORRESPONDING SECOND OR MODIFIED SHAPES
<u>2201</u>	PROVIDING A DATABASE OF CORRESPONDING TYPE, STYLE AND FEATURES
<u>2203</u>	lacksquare
<u>1405</u>	ALIGNING EACH OF SAID FIRST OR UNMODIFIED SHAPES TO THE SAME ORIENTATION
	↓ • • • • • • • • • • • • • • • • • • •
<u>1407</u>	ALIGNING EACH SECOND OR MODIFIED SHAPES AND THE CORRESPONDING FIRST OR UNMODIFIED SHAPE
<u>1409</u>	UTILIZING PRINCIPAL COMPONENT ANALYSIS WITH EACH ALIGNED FIRST OR UNMODIFIED SHAPE AND CORRESPONDING ALIGNED SECOND OR MODIFIED
	SHAPES TO DETERMINE PCA COEFFICIENTS
<u>1411</u>	PROVIDING ONE OR MORE NEURAL NETWORKS
<u>1413</u>	▼ TRAINING NEURAL NETWORK WITH A LEAST SQUARES SUPPORT VECTOR MACHINE TO PRODUCE SECOND SHAPES FROM FIRST SHAPES
<u>2205</u>	TRAINING THE NEURAL NETWORK TO SELECT A CORRESPONDING TYPE, STYLE AND FEATURES
<u>2207</u>	TRAINING NEURAL NETWORK TO PROVIDE TRIMLINES
<u>2209</u>	UTILIZING NEURAL NETWORKS TO PRODUCE CRANIAL

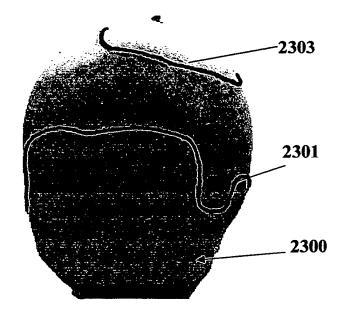


FIG. 23

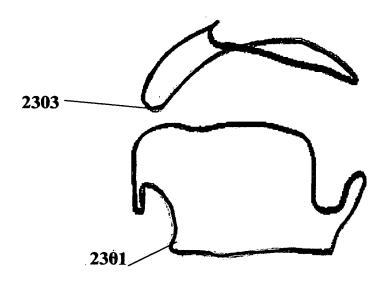


FIG. 24

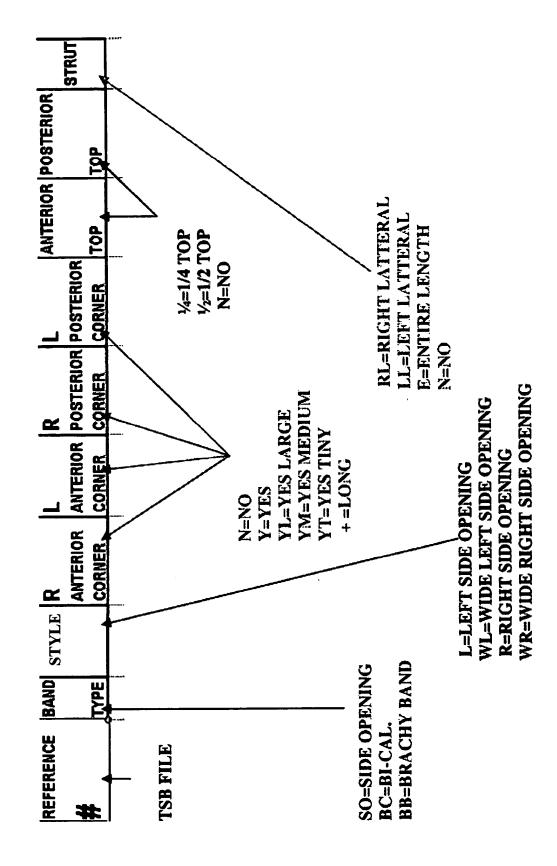


FIG. 25